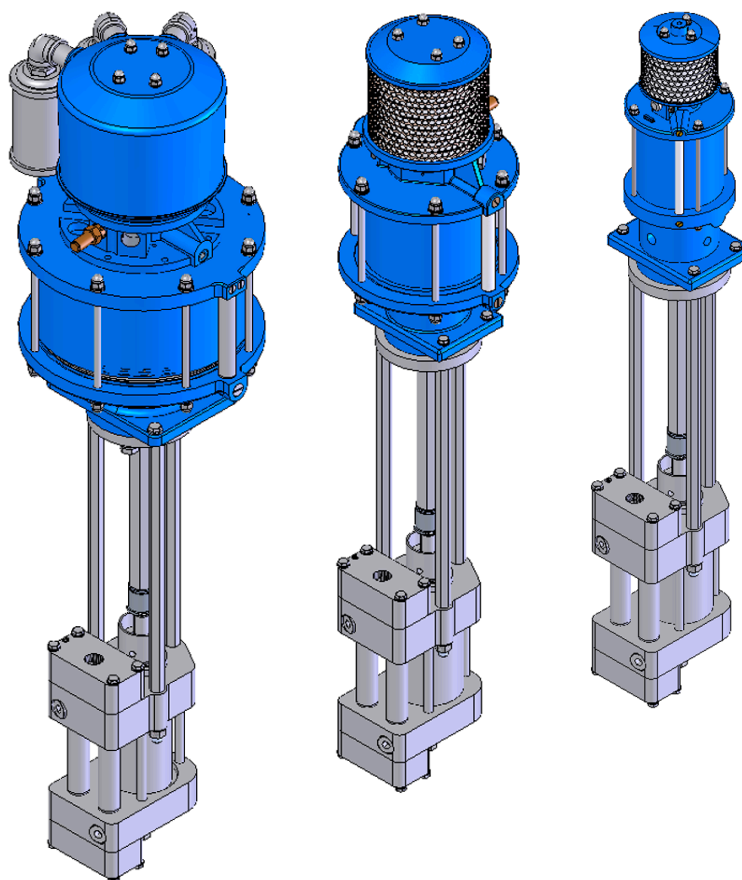


because it works



Operation manual

FOUR VALVE PUMP



Version:

- ☐ NDP 865.22 RS
- ☐ NDP 1140.17 RS
- ☐ NDP 1820.2 RS
- ☐ NDP 1820.4 RS

Factory No.:

.....

Declaration of Installation

according to Appendix II, No. 1 B of the Machinery Directive 2006/42/EC
including last changed by 2009/127/EC

The company **WIWA Wilhelm Wagner GmbH & Co. KG**
Gewerbestr. 1-3
35633 Lahnau
Germany

herewith declares that the equipment types **Four valve pump:**

NDP 865.22; NDP 1140.17;

NDP 1820.2; NDP 1820.4

Factory-No.:

are incomplete machines according to Article 2 g and designed exclusively for
installation or assembly with another machine or item of equipment.

These devices meet the following underlying safety and health and safety
requirements from the above guideline:

Appendix I Articles: 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.3.1, 1.3.2, 1.3.4, 1.3.7, 1.4.1,
1.5.2, 1.5.3, 1.5.4, 1.5.6, 1.5.7, 1.5.8, 1.6.1, 1.6.2, 1.6.4, 1.7.1, 1.7.3, 1.7.4.1,
1.7.4.2

Commissioning of the incomplete machine is prohibited until it has been
established that the end product into which this machine is to be installed
corresponds to the conditions of the EC Machinery Directive (2006/42/EC).

The special technical documents are prepared in accordance with Appendix VII
Part B of this guideline.

Documentary authority: WIWA GmbH / Tel. +49 6441 609 0

The manufacturer undertakes to send by electronic means the special
documents for the incomplete machine to single-nation bodies upon request. .

Lahnau,

Place, Date



Heidrun Wagner-Turczak
Managing Director

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WIWA Wilhelm Wagner GmbH & Co. KG
Gewerbestr. 1-3 • 35633 Lahnau • Germany
Phone: +49 6441 609-0 • Fax: +49 6441 609-50
E-Mail: info@wiwa.de • Homepage: www.wiwa.de

This operating manual is solely intended for personnel involved in preparation, operation and
servicing.

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its contents, unless this has been explicitly permitted. Infringements incur an obligation to pay
damage compensation. All rights reserved in the event of registration of the patented design,
industrial design or registered design.

This operating manual only applies in conjunction with the machine card that was given to you
with the user manual for your equipment. Please check that the type plate data is identical with
the information on the machine card. Please notify us immediately if there are discrepancies, if
the user manual has been incorrectly compiled or if the type plate is missing.

* = optionally available

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* = optionally available

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1 Foreword

1.1 Important for your safety

Operating personnel should always have access to this user manual!

The owner of the unit must ensure that the operator of the unit always has an operating manual at his/her disposal in a language he/she understands!

All persons involved in the set-up, commissioning, operation, maintenance, repair and servicing of the machine must have read and understood the user manual beforehand, and the chapter on Safety in particular. We recommend to the owner of this unit to have this confirmed in writing

In principle you should refrain from any work method that would affect the safety of **WIWA**® products and the operating personnel.

Please read and comply with:

- the applicable guidelines for your country.
In Germany, these are the “**Richtlinien für Flüssigkeitsstrahler**” (Guidelines for Liquid Jets), issued by: the Hauptverband der Gewerblichen Berufsgenossenschaften.
- The **manufacturer's instructions and processing guidelines** for coating or transfer materials are to be respected at all times.

This machine has been designed and manufactured under due consideration of all safety-related aspects. It corresponds to the current standard of technology and to applicable accident prevention regulations.

The machine left the factory in perfect condition and guarantees a high level of technical reliability and safety. Nevertheless, there are certain risks that can arise from incorrect operation or misuse:

- to life and limb of the operator or third party,
- to the machine and other material assets of the owner,
- to efficient work with the machine.

1.2 Machine card

This user manual is only valid in combination with the following machine card.

The machine card contains all important and safety relevant data and information about the machine.

- exact designation and manufacturer data
- technical data and limiting values
- equipment and test certificate
- data of purchasing
- Machine identification (machine components and accessories with article and spare parts numbers)



Notice

The data on the machine card must match the data on the type plate.

In case of discrepancies or if the type plate is missing please notify us immediately.

1.3 Pictogrammes

The notices and symbols used in this manual have the following meanings:



Attention!

marks a potentially dangerous situation. Disregarding this information can result in severe injuries!



Risk of explosion!

Highlights a situation with potential danger of explosion. Disregarding this information can result in severe or even fatal injuries!



Notice!

Indicates an informative text passage.
You should pay particular attention when reading it.

The following symbols indicate that protective equipment should be worn. With your health in mind you should always comply with the recommendations of the material manufacturer.



Wear protective clothing

Highlights the order to wear the prescribed protective clothing to protect against skin injuries caused by spraying material or gases.



Wear ear defenders

Highlights the order to use ear defenders in order to prevent your sense of hearing from being damaged by noise.



Use eye protection

Highlights the order to use eye protection in order to prevent your eyesight from being damaged by material splatter.



Use a respiratory protection mask

Highlights the order to use a respiratory protection mask in order to prevent your respiratory tract from being damaged by gases, fumes or dusts.



Wear protective gloves

Highlights the order to use protective gloves in order to prevent the skin from being damaged by burning.



Drum "material to be processed" + "cleaning agent"

Identifies a drum containing the material to be applied, which the user requires at the corresponding location in the manual.



Drum "empty"

Identifies an empty collecting vessel to be used by the user to collect contaminated spraying material.

1.4 Notices on the machine

Appropriate information signs and symbols on the machine refer to possible danger areas and must be respected at all costs.

Information signs and symbols must not be removed from the machine.

Damaged and illegible information signs and symbols must be replaced immediately.

The following signs can be found on the machine:

- Type plate
Please check that the type plate data are identical with those on the machine card.
In case of discrepancies or if the type plate is **missing** please **notify** us immediately.
- Warning sign on grounding the machine, (Fig. 1.1)
For version with material filter only*

According to the accident prevention instructions BGR 500, Chapt. 2.29 the owner is obliged to ground this piece of equipment.
Please follow our
operating instructions!

2 Safety Information

2.1 Danger sources

Four-valve pumps can cause life-threatening injuries if used improperly!

All persons involved in setting up, commissioning, operation, maintenance, repair and servicing of the machine must have read and understood the user manual beforehand, and the chapter Safety Note in particular.

In principle you should refrain from any work method that would affect the safety of **WIWA®** products and the operating personnel.

2.1.1 Dangers caused by the spray jet

**Attention!**

The material leaves the spray gun under high pressure.

Due to its cutting effect the spray jet can cause severe injuries by penetrating the skin or entering into the eyes.

- Never point the spray gun at yourself, other persons or other living beings.
- Do not hold your fingers or hands into the spray jet.
- Do not reach with your hands into the spray jet.

**Attention!**

From leakage points material can escape under very high pressure and cause serious bodily injuries and material damage.

Never try to seal leakages on connections and high pressure hoses by hand or by wrapping fabric around them.

- Depressurize the the complete system.
- Replace defective components.
- Never repair material hoses.

**Attention!**

Components which do not comply with the maximum permissible working pressure may quickly burst and cause severe injuries.

Please check:

- Material hoses and hose assemblies must comply with the maximum working pressure and the required safety factor.
- Material hoses must be leak tight and free of kinks, signs of abrasion or bulges.
- Hose connections must be tight.



Attention!

In case of material congestion or agglomeration of material in the spraying system, residual pressures can still be present despite pressure discharge. In case of necessary repair work on the plant escaping residual pressures may cause accidents.

Please bear in mind:

- Repair work must only be performed by trained personnel.
- Be extremely careful when disassembling material hoses and spray gun.
- When disconnecting material hoses you should cover the screw fitting with a cloth to catch any escaping material sprays.
- Switch off the machine before starting maintenance and cleaning work on the unit and the spraying accessories.
- Relieve the pressure in the entire system **before** starting maintenance and cleaning work on unit and accessories.

2.1.2 Danger to health

In closed or pressurized systems, in which aluminium components or galvanized parts have contact with the cleaning agent, hazardous chemical reactions may occur when using 1.1.1-trichloroethane (TCE), methylene chloride or other solvents containing chlorinated hydrocarbons (CFCs). If you wish to use the aforementioned solvents or varnishes and paints containing such solvents, we advise you to consult the **WIWA**® - customer service or **WIWA**® directly.

We would like to point out that we have a series of dual component systems in rust and acid proof design available for such materials.

2.1.3 Notices on the permissible operating pressure

The maximum operating pressure specified by us must generally be adhered to for all **WIWA**® parts (e.g. four valve pump, safety valve, etc.).

At varying operating pressures the lowest value is always valid as the maximum admissible operating pressure for the entire system.

General example:

Pump	up to	200 bar
Material hose	up to	600 bar

The maximum permissible operating pressure for the entire system in this example is 200 bar.

The existing air inlet pressure on the four valve pump must be easy to read using a pressure gauge.

WIWA® Devices which have a maintenance unit* or a compressed air regulator* must be fitted with a pressure gauge.



Danger!

Any sudden overpressure in the system can lead to the bursting of components. This may result in damage to persons and property.

- Never allow the system to run without safety valves.
If the safety valve needs to be replaced, you can find the corresponding order number on the machine card.
- When using new safety valves make sure that the valves have been set to the max. permissible air inlet pressure of the **WIWA®** four valve pump (see type plate) and lead sealed.

2.1.4 Gefahr durch Explosion



CAUTION!

The high flow velocities associated with the Airless spraying method may cause static charging. Static discharges can cause fire and explosion.

- Always use open containers!
- Never spray solvents or solvent containing materials into cone-top cans or drums with bunghole!
- Stand the containers on a grounded surface.
- When using metal containers watch out for contact between spray gun and container wall.
- Only use conductive material hoses. All original **WIWA®** material hoses are conductive and perfectly adapted to our equipment.



Risk of explosion!

Heating up cleaning agents can cause an explosion. This can cause severe injuries to body and eyes.

- Pay attention to the flashpoint and the ignition temperature of the cleaning agent!
- Switch off the material flow heater if you need to perform the following work on the system:
 - Cleaning
 - Pressure tests
 - Preparation work
 - Decommissioning
 - Maintenance and repair

2.1.5 Danger caused by disregarding the explosion protection

The system must NOT be operated in explosion protection zones!

Spraying equipment designed without explosion protection must not be used in workshops that come under the explosion protection ordinance.



Note!

Smoking, naked flames and/or any potential sources of ignition are not permitted anywhere in the working area.

2.2 Operating personnel

Juveniles under the age of 16 have no permission to operate this equipment.

The owner of the machine must ensure that the user manual is made available to the user and make sure that the user has read and understood its contents.

Setup, cleaning, maintenance and repair work:

Before starting work you must interrupt the compressed air supply to the machine. Make sure that the machine is free of residual pressure, in both the air and the material side.

After the completion of work you must in any case check the function of all protective devices and the correct function of the machine.

Activity	Qualification of personnel
Setup work	instructed user
Service work	instructed user
Cleaning work	instructed user
Maintenance work	personnel trained by WIWA - Customer service
Repair work	personnel trained by WIWA - Customer service

2.3 Protective equipment



We would like to point out that the valid guidelines and stipulations depending on the work environment (mining, closed rooms, etc) must be respected in any case.



Always wear the protective clothes specified by the material manufacturer to avoid injuries.



The sound pressure level of this unit is less than 85 db(A). However, operating personnel should still be provided with suitable noise protection equipment.



It is recommended that the operator should always wear a respiratory protection mask, even though the paint mist has been minimized in Airless spray painting applications with correct pressure setting and working mode.



Wear protective goggles to protect against eye injuries caused by mechanical or chemical influences.



Wear protective gloves with lower arm protection to avoid burn injuries.

2.4 Safety features

All safety features must be checked:

- before each start-up of the equipment!
- before starting work on or with the equipment!
- after completion of setup work!
- after cleaning and servicing work!
- after maintenance and repair work!

Check list to check the safety features on the depressurized unit

Please check:

- ☐ the lead seal on the safety valve for damage.
- ☐ the safety valve for external damage.
- ☐ grounding cable* for damage.
- ☐ grounding cable* connections on unit and conductor.
- ☐ the correct function of the compressed air shut-off valve*.


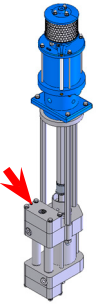


Attention!

Not fully functional safety features or other deficiencies on the machine can lead to malfunctions. This may cause serious injuries to persons and damage to property.

- Stop operation of the system immediately!
- Operation of the system must only be resumed after the correct functional state has been re-established.

All units are delivered with the following safety features:

 <p>Fig. 2.1</p>	<p>Safety valve, (Fig. 2.1)</p> <p>The safety valve makes sure that the max. permissible air inlet pressure at the air motor is not exceeded. The safety valve will open and vent off air when the air inlet pressure exceeds the set limiting value.</p>
 <p>Fig. 2.2</p>	<p>Grounding cable*, (Fig. 2.2)</p> <p>Grounding cable</p> <p>The system must be connected to an electrically conductive object with a grounding cable, to prevent electrostatic charging. A connection for the grounding cable is located at the exhaust manifold of the material pump, ().</p> <p>A grounding cable is already fitted in the version with material filter*.</p>

* = optionally available

	<p>Air shut-off*</p> <p>For conventional sprays, always install a compressed air shut-off valve* (if not installed already) at the air inlet of the four valve pump.</p> <p>This enables immediate shutting down of the unit.</p> <p>Before working in the unit, you must first relieve the pressure in the pump to allow the residual pressure in the unit/system to dissipate</p>
--	--

2.5 Handling the system and auxiliary materials

- Follow the safety notes and dosing information of the manufacturers and the generally applicable regulations when handling spraying materials, cleaning agents, oils, greases and other chemical substances.

2.6 Emergency procedures

2.6.1 Leakages

- In case of leakages the system must be shut down **immediately** and the complete system must be depressurized:
 - ☐ Disconnect the compressed air supply:
 - ☐ Depressurize the the complete system.
 - ☐ Faulty parts must be replaced immediately.

2.6.2 Injuries

- Immediately consult a physician if injured when handling fluid jets (because of their cutting effect)!

2.6.3 Fires

- Read and comply with the instructions for fire alarm and escape routes, which are displayed in your factory or at any work place.
- Only use the extinguishing substances stipulated by the material manufacturer.

3 Machine Description

3.1 Intended use of the machine

Four valve pumps are used for material feeding in paint circulator systems and dispensing stations in trade and industry.

Depending on the version in use, four valve pumps can be used for processing low viscosity drum materials (varnishes, paints, water-based coatings, solvents, oils and finishes, etc.).

- These pumps are fitted with appropriate packages depending on the processing material and are available in rust- and acid-resistant versions.
- When using circulation systems (continuous fed), a stroke frequency of 20 dual strokes per minute should not be exceeded.

Each unit has been especially adapted to the processing material and is to be used for this purpose only.

Any other use is deemed to not be in accordance with regulations.

The manufacturer's approval must be obtained before **WIWA** units are used for any other purpose or with other materials, i.e. not in accordance with the intended use, otherwise the warranty will become null and void.

Intended use also includes compliance with the technical documentation and adherence to the prescribed operating, servicing and maintenance guidelines.

3.2 Note on warranty

Unauthorized conversions or alterations should not be undertaken on safety grounds.

Protective equipment should not be dismantled, converted or bypassed.

Use of components which have not been manufactured or delivered by **WIWA** renders any warranty null and void.

The unit should only be operated within the prescriptive limit values and machine parameters.



Notice: Dangers caused by accessories and spare parts:

If you use original **WIWA** accessories and spare parts, their suitability for use with our equipment is guaranteed. It is, however, mandatory to respect the safety regulations of the accessories and spare parts.

These safety regulations are found in the corresponding user manuals for the accessories.

If foreign accessories or spare parts are used, the company **WIWA** cannot guarantee the safety of the entire system. Similarly liability is null and void for damages or injuries incurred through use of those accessories and spare parts.

3.3 Machine surroundings

3.3.1 Emissions



Depending on which materials are processed, hazardous fumes may be generated. For this purpose, always ensure for sufficient aeration and ventilation at the workplace for avoiding damage to your health and property. You should **always** follow the processing information issued by the material manufacturers.

3.3.2 Sound pressure level



The sound pressure level of this unit is less than 85 db(A).

However, operating personnel should still be provided with suitable noise protection equipment. The operator is responsible for adhering to noise and vibration protection regulations. For this purpose, pay special attention to the conditions of the setting up location, e.g. will the noise exposure increase if the system is set up in or on hollow bodies.

3.4 Transporting the machine and additional equipment



Notice:

The systems leave the factory in flawless condition and are appropriately packed for transport.
Upon arrival you should check the system for any apparent transport damage.

- Disconnect the entire power supply for the machine, even for short transport distances.
- Empty the machine before transport.
- Remove all loose components (e.g. tools) from the unit.
- Caution when loading with hoisting gear!
 - ❑ When using hoisting gear ensure sufficient load bearing capacity.
 - ❑ Never stand under suspended loads or inside the loading area. This poses a danger to life!
 - ❑ Use only appropriate transport vehicles with sufficient load bearing capacity.
You will find the dimensions and weights of the equipment in chap. „12.1 Technical data“, on page 36.
- Secure the load on the transport vehicle against slipping and falling off.
- Parts or equipment that have been removed for transport purposes must be attached professionally and in accordance with the intended use before commissioning.

3.5 Place of installation of the machine

- When installing the **WIWA®** four valve pump in a system (e.g. in a paint circulation system) pay attention to the information in the operating manual for the entire system.
- Do not block access to safety devices.
- Always keep the working area, especially all walkways and standing areas, clean and tidy. Clean up spilled materials or cleaning agents immediately.
- Always ensure adequate ventilation at the work place to avoid damage to health and objects. Always observe the processing instructions issued by the material manufacturers.
- The owner must protect the entire system by undertaking appropriate lighting protection measures.
- Strictly comply with the valid accident prevention instructions.

**Attention!**

If the unit is used outdoors, a lightning can cause a dangerous situation for the operator.

- Never operate the unit outdoors when there is a thunderstorm!

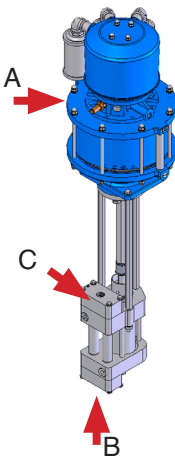
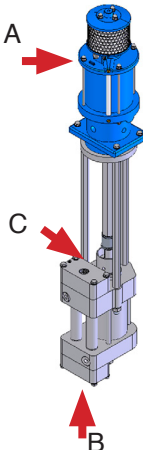
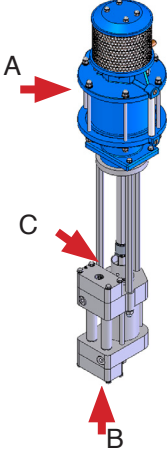
3.6 Storing the machine and additional equipment

- Store the machine in a frost-free, vibration free, dry and possibly dust free environment.
- The machine and its implements must under no circumstances be stored outside closed rooms.

3.7 Disposal of the machine and additional equipment

- Clean the unit thoroughly of all material residues.
- Disassemble the entire unit and separate the materials.
 - ❑ Take metal parts to scrap metal services.
 - ❑ Plastic parts can be disposed of through the household waste.
- Residue of spraying material, cleaning agent, oils, greases and other chemical substances must be collected in accordance with statutory provisions concerning recycling and waste disposal.
The official local waste water laws are valid.

3.8 Unit variants

Unit type	A = Air inlet / B = Material inlet / C = Material outlet
NDP 865.22 RS	 <p>Fig. 3.1</p>
NDP 1140.17	without illustration
NDP 1820.2 R	 <p>Fig. 3.2</p>
NDP 1820.4 RS	 <p>Fig. 3.3</p>

* = optionally available

4 Installation and Assembly

4.1 Assembly options

The valve pumps can be mounted directly onto a drum, into a circulation- of feeder system, or into a frame. The illustrations shown are only examples. The type of unit you have chosen and the accessories used are crucial for ensuring optimum results and must be adapted to the intended use as appropriate.



Notice:

The four valve pump comprises rust and acid-free material.

To ensure total resistance to corrosion, use stainless steel pipes..

4.1.1 Assembly on drum

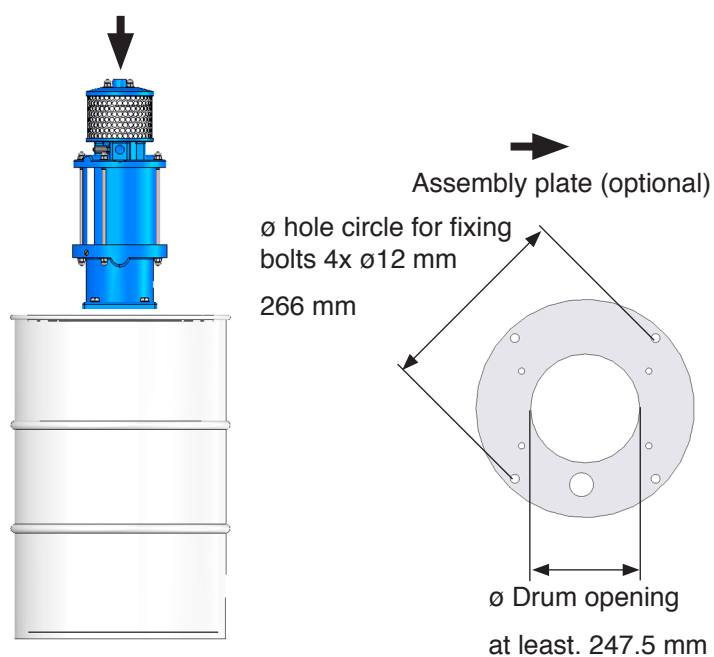


Fig. 4.1

4.1.2 Assembly in system

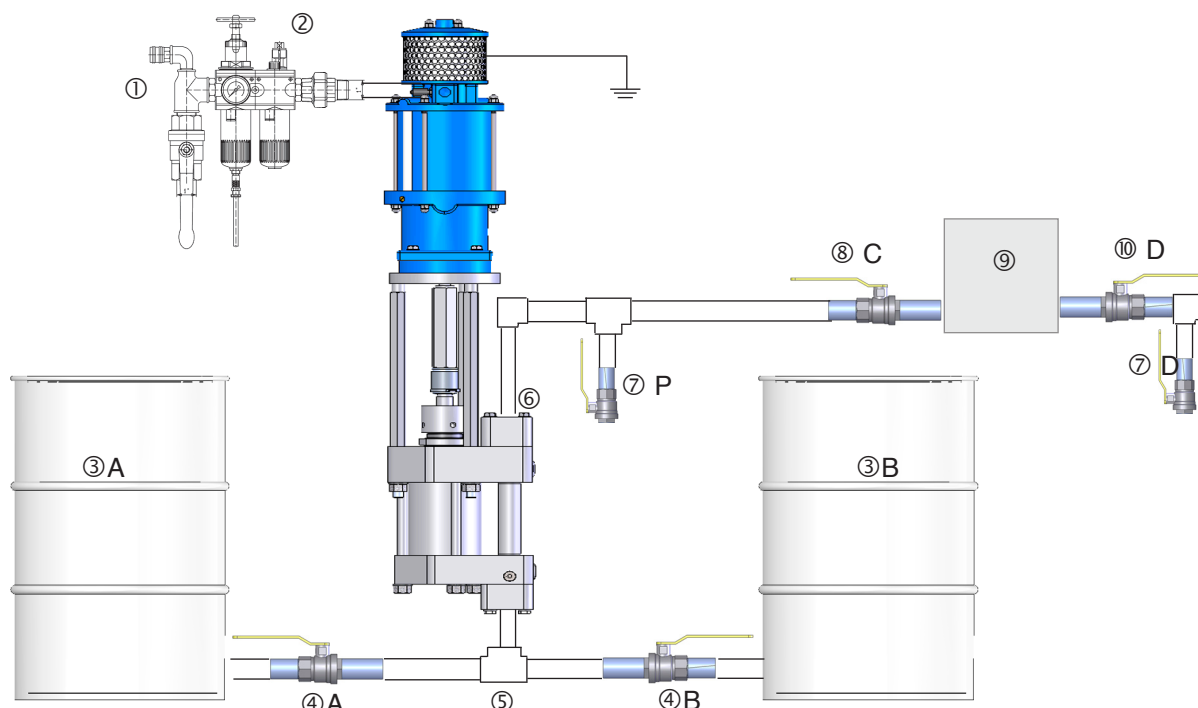


Fig. 4.2

Pos.	Description	Task
①	Compressed air connection* with compressed air shut-off valve*	Shut-off compressed air supply when performing servicing, cleaning and maintenance work
②	maintenance unit* with compressed air regulator*	The compressed air is mixed with oil to prevent corrosion to the air motor. The compressed air regulator regulates the speed of the air motor.
③	Material drum* A+B	
④ A+B	Material shut-off valve* on material drum	Shut-off material supply when performing servicing, cleaning and maintenance work.
⑤	Material inlet	
⑥	Material discharge	
⑦ P+D	Pressure relief valve*	Release the material pressure in the material pump before performing servicing, cleaning and maintenance work Ward against serious bodily injury caused by the escape of pressurised materials.
⑧ C+D	Material shut-off valve* on pressure compensation drum*	Shut-off material supply when performing servicing, cleaning and maintenance work.
⑨	Pressure compensation drum*	Prevents material from flowing back into the pump and compensates for any fluctuations in material output.
⑩	Material shut-off valve* after pressure compensation drum*	Shut-off material supply when performing servicing, cleaning and maintenance work

* = optionally available

4.2 Setting up the unit

Prerequisites

All materials to be processed must be supplied from the manufacturer with data concerning viscosity, application temperatures, mixing ratios, etc. If this is not the case, consult the corresponding manufacturer and ask for these data.

- The spray material must be mixed slowly but surely before beginning work. For optimal preparation of the materials **WIWA**® offers a wide range of accessories, like e.g.:
 - agitators in various sizes
 - material preheating containers in different sizes
 - Material Flow Heater
- Make sure all system parts are leak-free at all times!
- Do not use cone-top cans!



Always wear the specified protective clothes.

Procedure

1. Check the permissible highest pressure for all accessories:
It must be higher than or equal the maximum operating pressure of the four valve pump as specified on the type plate.
2. Compare the maximum operating pressure of the safety valve with the specifications on the type plate. These data must match.
3. Consider the required floor space - see chap. „12.1 Technical data“, on page 36.
 - ☐ All operating elements must be easily accessible.
 - ☐ The access to the safety features must be kept clear.
4. Connect the parts/accessories (e.g. maintenance unit*, compressed air regulator*, material hose*) removed for transport to the unit .
5. Screw the unit securely onto a drum, frame or into a system.



Attention!

Material emerging from the connections can cause severe physical injuries and damage to property. Check all rotatable parts, nuts, screws and hose connections and tighten these properly.



Note!

To prevent the ingress of dirt and oversized material particles, we recommend you also mount a suction filter* on the material inlet. This will minimise the wear on the pump.

4.3 Ground the system

The high flow velocities associated with the spraying method may cause static charging.

Static charges can cause fire and explosion.

- Ground the complete system.

System component	Description of grounding
Four valve pump	by means of a grounding cable*: Fixing bolt on exhaust manifold of material pump, (Figure 4.3)
Material hoses*	conductive material hoses, e.g. original WIWA ® material hoses
System components	Grounding is accomplished in connection with the WIWA - material hoses.
Material drum (external)	Grounding acc. to local regulations.
Object to be sprayed	
Cleaning agent container	

4.4 Check the condition of the release agent

- Fill the unit with release agents, see chap. „10.3 Release agents“, on page 31.
- Does not apply for assembly on drums!
- Check the release agent level - see also chap. „10.3 Release agents“, on page 31.

4.5 Compressed air connection

Connect the unit to the local compressed air supply.

- ☐ The diameters of the air supply hoses must match the connections on the equipment.
- ☐ Version with maintenance unit*:
Carry out the settings shown in chap. „9.1 Maintenance unit“, on page 28.



Attention!

Unexpected activation of the four valve pump can cause serious injury or damage to the unit.

For this reason, install a compressed air regulator* and a compressed air shut-off valve* in the vicinity of the four valve pump to allow the compressed air to be regulated and shut off.

5 Commissioning

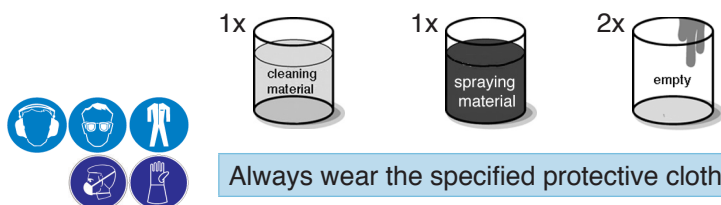
After assembly in the factory the correct functioning of this machine was checked with a testing medium.

The entire system must initially be flushed with the cleaning agent recommended by the material manufacturer and belonging to the material, before it is filled with the material to be applied, to make sure that the material to be processed is not contaminated by the testing medium.

Prerequisites

The unit has been set up and connected as specified in chap. „4 Installation and Assembly“, on page 18.

The following is required



Procedure

1. Begin with the supply of compressed air and cleaning agent

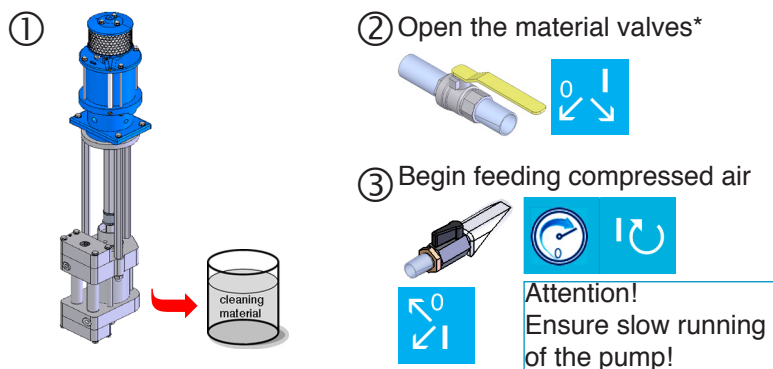


Risk of explosion!

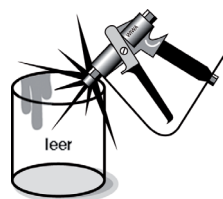
Cleaning agents are highly flammable and can cause explosions when heated. This may result in damage to persons and property.

Remember the flash point of the cleaning agent!

Do not switch on any heater when using cleaning agents!



2. Rinse unit/system



Duration: until clean, bubble-free material starts to run out



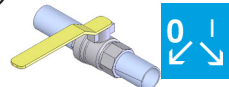
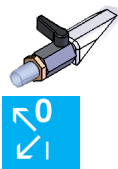
Note!

If several spray guns are connected, open them in sequence.

Check drum contact!

3. End supply of compressed air and cleaning agent

- ① Shut off the compressed air supply ② Close the material valves*



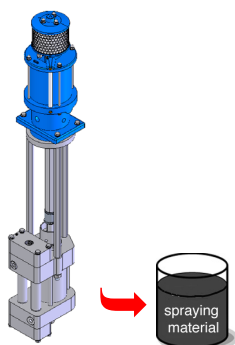
6 Operation



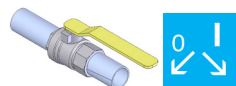
Always wear the specified protective clothes.

1. Prepare the material

①



② Open the material valves*



③ Begin feeding compressed air



Attention!
Ensure slow running
of the pump!



Note!

During operation keep checking the material feed to the unit, to prevent the development of friction heat caused by dry running of the material pumps. Please note:

- ☐ no empty material drums while the material pumps are running.
- ☐ Suction systems must not be clogged, kinked or defective.
- ☐ The unit must immediately switch off if no material is delivered.

2. Pump out the remaining cleaning agent and fill pump with material



Risk of explosion!

Cleaning agents are highly flammable and can cause explosions when heated. This may result in damage to persons and property.

Remember the flash point of the cleaning agent!

Do not switch on any heater when using cleaning agents!



Requirement: - after initial commissioning
- after all service work

Duration: until clean, bubble-free material starts to run out



Note!

If several spray guns are connected, open them in sequence.

Check drum contact!

* = optionally available

3. Pressure tests

Check the entire system for leakages.

In case of leakages stop operation immediately and have the malfunction corrected by expert personnel.

4. Open deicing (units with air motor LM 333 only)

Open the deicing regulator at the air motor



Fig. 6.1



Note!

The deicing may stay open over the entire life cycle of the equipment.

5. Configure the maintenance unit*

Read chap. „9.1 Maintenance unit*“, on page 28.

6. Replace the filter element in the material filter*

Read chap. „9.2 Material filter*“, on page 30.

7. Check condition of release agent

Read chap. „10.3 Release agents“, on page 31.

8. Set the operating pressure



Material pressure = air inlet pressure x pressure ratio

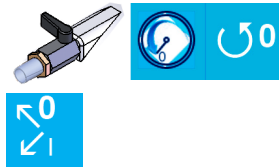
7 Decommissioning



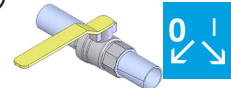
Always wear the specified protective clothes.

1. End supply of compressed air and material

① Shut off the compressed air supply



② Close the material valves*



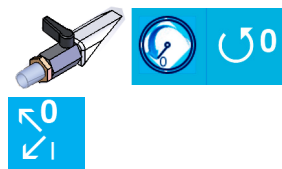
2. Relieve pressure in unit according to chap. „8 Pressure relief“, on page 27

8 Pressure relief

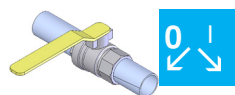


Always wear the specified protective clothes.

1. Shut off the compressed air supply



2. Close the material valves*



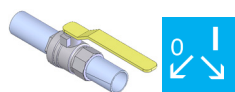
3. Relieve spray gun*



Note!

If several spray guns are connected, open them in sequence.
Check drum contact!

4. Open pressure relief valves*



* = optionally available

9 Accessories*

The accessories are optionally available and are not included in the unit's scope of supply.

9.1 Maintenance unit*

9.1.1 Components of maintenance unit

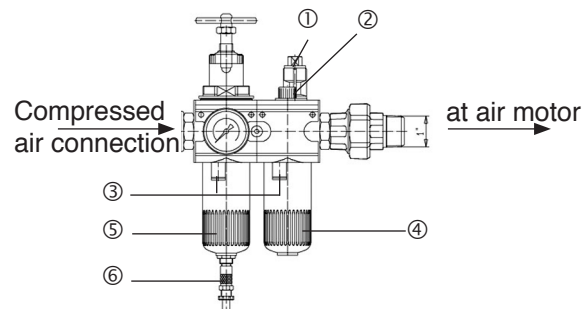


Fig. 9.1

Pos.	Designation
1	Setscrew for fog oiler
2	Filler plug
3	Slide
4	Oil tank
5	Water release agent
6	Drain valve

9.1.2 Check lubricant

Check the lubricant for the air motor in the container of the maintenance unit and top up slightly, if required.



Note!

High humidity can cause icing of the motor.
In case of icing use pure anti-freeze agent.

9.1.3 Adjusting the fog oiler

1. Allow the air motor to run slowly with an air inlet pressure of approx. 4 bar.
2. Check:
1 drop of lubricant after approx. every 10 - 15 double strokes of the air motor
If necessary adjust the regulating screw on the lubricator with a screw driver.
3. Check the amount of oil in the oil container every day.
 - The maintenance unit must never be operated without oil.
 - The max. oil level is indicated by a circumferential groove in the bowl.
 - To fill the oil bowl loosen the filling screw and fill the reservoir directly.

* = optionally available


Note!

Only use the lubricants and anti-freeze agents mentioned in chap. „12.2 Operating materials“, on page 36.

1 Lubricant /
10-15 Double strokes

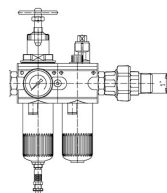


Fig. 9.2

9.1.4 Draining the condensation water

1. The accumulated condensate is automatically drained off through the drain valve. For this purpose hold the hose into an empty collecting vessel.
2. Check the bowl regularly for dirt residues and clean it as required.

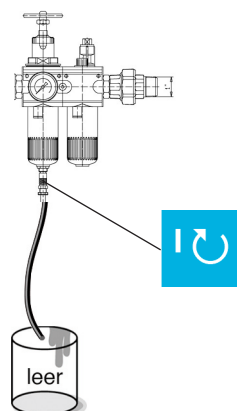


Fig. 9.3

9.1.5 Notes on oil reservoir and water separator

- Disassembly:
 - Press the slide down.
 - Turn the bowl anti-clockwise.
- Assembly:
 - Make sure the O-ring is correctly fitted.

9.2 Material filter*



Attention!

Before you begin servicing the material filter*, always disconnect the entire power supply and carry out a pressure relief according to 'chap. „8 Pressure relief“, on page 27.

- Clean the filter element in the material filter* each time the material is replaced or daily.
- The filter element* must be suited to the spray material and spray gun*!
- The mesh size must always be slightly finer than the bore of the nozzle used.
- Do not use a filter element when applying coarse pigmented or fibre filled materials.

Filter element	Nozzle size	
	over	to
M 200 (white)	-	0,23 mm / 009"
M 150 (red)	0,23 mm / 009"	0,33 mm / 013"
M 100 (black)	0,33 mm / 013"	0,38 mm / 015"
M 70 (yellow)	0,38 mm / 015"	0,66 mm / 026"
M 50 (orange)	0,66 mm / 026"	-

9.2.1 Changing and cleaning the filter element or the O-ring

1. Unscrew the cap with the pin spanner
2. Loosen the nut with an open end spanner and remove the filter element.
3. Clean the filter element.
For this purpose use only the cleaning agent matching the Material.
Replace the filter element, if it shows any signs of damage.
4. Replace the O-ring if it is leaking.

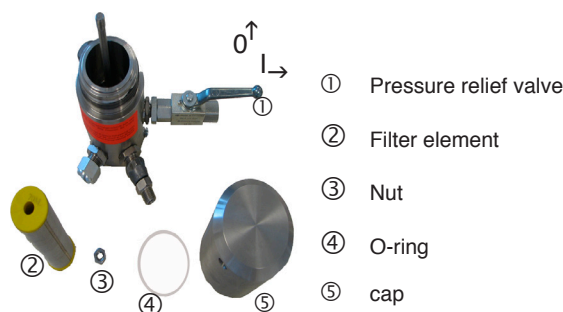


Fig. 9.4



Note!

Material filters* in R- and RS version

It is mandatory to slightly grease the threads for easier assembly/disassembly.

* = optionally available

10 Maintenance

10.1 Check cycles

According to the accident prevention instructions for “Work with fluid spraying equipment” BGR 500, chapter 2.36, the unit needs to be inspected and serviced regularly by an expert (**WIWA** Customer Service).

The unit needs to be inspected:

- before initial commissioning,
- after the modification or repair of parts of the system, which could affect safety,
- after work breaks longer than 6 months,
- but at least every 12 months.

For decommissioned units the inspection can be postponed until the next commissioning. The inspection results must be recorded in writing and kept until the next inspection. The inspection report or a copy thereof must be available at the place of use of the equipment.

10.2 Important notes



Attention!

Disassembling the pressurized spraying unit can cause severe injuries to body and eyes.

- Always switch off the unit before starting maintenance and repair work.
- Depressurize the the complete system.
- Be extremely careful when disassembling material hoses*and spray gun*.
- Before disassembly cover the screw connections on the material hoses with a cloth to catch possible material spatter.
- During assembly apply a thin coat of thread paste on all threads. This prevents damage to the thread during assembly and makes disassembly easier.

10.3 Release agents



Note!

Not applicable to drum version!

Filling release agents into the release agent cup prevents the formation and hardening of material deposits on the piston.

Check the release agent at regular intervals. Replace the packing in good time to prevent early appearance of wear on the piston. Colour changes in the release agent indicate faulty packages which reduces the performance of the system.

10.3.1 Fill release agent

Before each time you commission, check the condition of the release agent and replenish as required.

1. Bring the piston rod of the material pump into the lower position.
2. Fill the release agent until just over the edge of the bores in the packing nut.

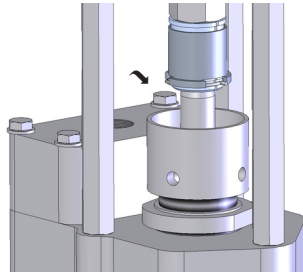


Fig. 10.1

3. In the event of a discoloration, replace the packing as shown in chap. „10.4 Readjust packing“, on page 32.
Every 50 operating hours check the release agent for discolouration caused by spraying materia

10.3.2 Replace release agent

In case of slight discolouration

1. Empty the release agent cup.
2. After examination top up with a clean amount of release agent.

In case of excessive discolouration and high spraying material content

1. Clean the release agent cup.
2. Replace the upper pump packing (see Spare parts list for the material pump) and top up with new release agent.

10.4 Readjust packing



Note!

Not applicable to drum version!

1. Stop the pump during its downwards movement.
2. Before each readjustment of the packing, perform a pressure relief of the unit according to chap. „8 Pressure relief“, on page 27.
3. Readjust the new packing while the pump is stationary.

* = optionally available

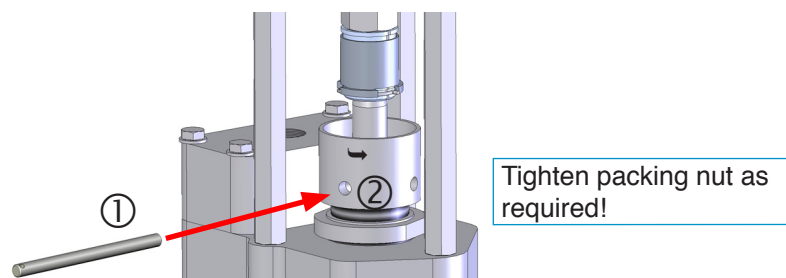


Fig. 10.2

- 4.** Fill new release agent into the release agent cup according to chap. „10.3.1 Fill release agent“, on page 32.
- 5.** If the release agent continues to be contaminated by material discharge, this means the packages are worn and will have to be replaced.

11 Malfunctions and Troubleshooting

Fault	Possible cause	Remedy
Pump not running..	➤ Compressed air supply disconnected.	➤ Check compressed air supply.
	➤ Material blocked.	➤ Clean or replace material line carefully.
	➤ Ball valves blocked.	➤ Dismantle and clean pump.
	➤ Material filter* blocked.	➤ Clean or replace material filter*.
	➤ Air motor faulty/ control unit blocked.	➤ Contact Customer Service..
The pump runs evenly but does not draw in any material.	➤ The ball is stuck at the inlet valve (dried-on material).	➤ Lift the ball in the inlet valve to release it.
	➤ The suction pipe is leaky in the screw fitting.	➤ Tighten suction pipe and reseal the screw fittings where necessary.
	➤ The suction filter* is contaminated.	➤ Clean suction filter*.
	➤ The viscosity of the conveying material is too high.	➤ Dilute conveyor agent or use a more powerful pump.
Pump is operating irregularly, reduced pump performance.	➤ Valves are contaminated.	➤ Clean system and where necessary leave to stand in dilution.
	➤ The valves, packings or piston rod are worn.	➤ Replace the worn parts.
	➤ Pump pressure too low.	➤ Increase the air inlet pressure.
	➤ The viscosity of the conveying material is too high.	➤ Dilute conveyor agent or use a more powerful pump.
	➤ The suction filter* and/or material filter* is/are blocked.	➤ Clean the filters*.
	➤ The air motor control is defective	➤ Contact Customer Service.
	➤ The unit is being overstretched.	➤ Use a more powerful pump. .
Pump continues to operate even when discharge points are closed.	➤ Wear on packing, valves or piston rod.	➤ Replace worn parts.
	➤ Overpressure valve in lower section faulty	➤ Replace overpressure valve.

Fault	Possible cause	Remedy
The air motor freezes	➤ The number of strokes is too high.	➤ Reduce the air inlet pressure. You may need to use a more powerful pump.
	➤ Inlet air contains too much condensate.	➤ Install maintenance unit* if not already installed. Empty water separator more often.
	➤ Very unfavourable operating conditions (high air humidity or temperatures around freezing point).	➤ Fill oiler on maintenance unit* with anti-freeze and adjust so that a drop are released every 5 to 10 double strokes.

* = optionally available

12 Appendix

12.1 Technical data

Model	Pressure ratio	Pump capacity per double stroke (cm ³)m ³	Pump capacity per double stroke (cm ³)	max. operating pressure (bar)	Air inlet	Material inlet	Material outlet	Weight approx. (kg)	Dimensions approx. (mm)
865.22 RS	22:1	865	8	176	G 1"	G 1½"	G 1"	98	478 x l*
1140.17R	17:1	1140	8	136	G 1"	G 1½"	G 1"		
1820.2 R/K	2:1	1820	8	16	G 1½"	G 1½"	G 1"	55	ø 292 x l*
1820.4 RS/K	4:1	1820	8	32	G 1"	G 1½"	G 1"	65	ø 292 x l*

*l => customer-specific length can be found in the original drawing

Model	Air motor	Material pump
865.22 RS	333/120	865-120R
1140.17 RS	333/120	1140-120R
1820.2 RS	140/120	1820-120R
1820.4 RS	200/120	1820-120R

Emitted sound pressure level at the work place	
in idle (LpAd) (dB) at 8 bar air inlet pressure	84
loaded (LpAd) (dB) at 8 bar air inlet pressure	80

12.2 Operating materials

Designation	Order number
Release agent ¹	Order no. 0163333
Pneumatic oil (0.5 litres) ²	Order no. 0632579
Anti-freeze agent ²	Order no. 0631387
Retention agent (50 ml) ³	Order no. 0000233
Thread paste (450 g) ³	Order no. 000015
Lubricant (acid-free grease) ³	Order no. 000025

* = optionally available

-)¹ Plasticizer to fill into the release agent cup of the material pump
)² for maintenance unit
)³ Materials required for cleaning and repair work (see information in spare parts lists)

12.3 Instruction Certificate

This certificate follows the EC-Directive for working utensils 85/655/EEC, section II article 7.

The owner of the device specified below has instructed the operating personnel.

Manufacture	
Type designation	
Year of construction	
Serial-number	

The instruction was conducted by the representative of the owner:

Foreman or responsible superior, name, department	
---	--

The instructed person has read and understood the user manual for the equipment listed above, especially the chapter about safety, and declares that he is able to operate the unit in a safe way.

Personnel for:	Date, name
Operation	
Repair and maintenance	
Electrics / electronics	



Headquarter and production

WIWA Wilhelm Wagner GmbH & Co. KG
Gewerbestr. 1 – 3 • 35633 Lahnau • Germany
Tel +49 6441 609-0 • Fax +49 6441 609-50
E-Mail: info@wiwa.de • Homepage: www.wiwa.de

WIWA partnership in USA

WIWA LP
107 N. Main St.
P.O. Box 398, Alger, OH 45812
Tel.: +1 (419) 757-0141
Fax: +1 (419) 549-5173
Toll Free: +1(855) 757-0141
E-Mail: jwold@wiwalp.com
Homepage: www.wiwa.com

WIWA subsidiary in China

WIWA Taicang Co., Ltd.
Add: No.87 East Suzhou Rd.,
Taicang city, Jiangsu province 215400, P.R.China
Tel: +86 512-5354 8858
Fax: +86 512-5354 8859
E-Mail: info@wiwa-china.com
Homepage: www.wiwa-china.com

Your contacts throughout the world

Michel Laksander

Sales Representative
France

Mobil: +33 6 37 01 92 97
Tel.: +33 3 23 62 11 20
E-Mail: laksander@orange.fr
2 Bis rue de l'église, F-02240 Brissy Hamégicourt,
France

Wolfgang Pucken

Director International Sales
North of Germany, Israel, Hungary, Romania, Turkey,
Poland, Malta, India, Pakistan, Africa, Morocco

Mobil: +49 173 5432559
Tel.: +49 2226 12708
Fax: +49 2226 13973
Frankenstraße 37, 53359 Rheinbach-Oberdrees
Germany

Robert Jansen

Director International Sales
Finland, Sweden, Norway, Denmark, Scotland, England,
Holland, Belgium, France, Spain/Portugal, Italy,
Croatia, Greece, Czech Republic, Slovakia, Slovenia,
Luxembourg, Bulgaria, Egypt, Libya, Dubai, Abu Dhabi,
Catar, Bahrain, Kuwait, Saudi Arabia, Iran, Oman

Mobil: +31 6 18 88 40 97
Tel.: +31 33 494 69 81
Fax: +31 33 494 75 83
E-Mail: rob.wiwa@gmail.com
Rietgans 38, 3752 KH Bunschoten
The Netherlands

Otto Dietrich

Director International Sales
Russland, Ukraine, Weisrussland (Belarus), Moldawien,
Baltische Staaten (Litauen, Lettland, Estland)
Kaukasische Staaten (Armenien, Azerbeidzhan, Georgien),
Asiatische Staaten (Kasachstan, Uzbekistan, Turkmenistan,
Kirgizistan, Tadschikistan)

Mobil: +49 160 1574385
Tel.: +49 6742 899336
Fax: +49 6742 899337
E-Mail: o_dietrich@wiwa.de
Binger Gasse 34, 56154 Boppard
Germany